TEXAS DEPARTMENT OF INSURANCE

Engineering Services Program / MC 103-3A 333 Guadalupe Street P.O. Box 149104 Austin, Texas 78714-9104
Phone No. (512) 322-2212 Fax No. (512) 463-6693

PRODUCT EVALUATION Effective Date: June 1, 2012 (Revised September 1, 2012)
DR-558 Reevaluation Date: **December 1, 2013**

*The following product has been evaluated for compliance with the wind loads specified in the **International Residential Code (IRC)** and the **International Building Code (IBC)**.*

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.

StormMax MSD-375 Entrance Doors, Impact Resistant, manufactured by

Oldcastle Building Envelope
803 Airport Road
Terrell, Texas 75160
Telephone: (972) 551 - 6100

will be acceptable in designated catastrophe areas along the Texas Gulf Coast when installed in accordance with the manufacturer's installation instructions the design drawings referenced in this evaluation report, and this product evaluation.

PRODUCT DESCRIPTION

The StormMax MSD-375 Entrance is an aluminum frame entrance door system used for commercial storefront or curtain wall installations. The perimeter frame members are 2 1/2" x 5" or 1" X 5" subframe. This product evaluation report is for an aluminum frame Entrance Door system on the following tested constructions:

GENERAL DESCRIPTION

System 1: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (77" x 98 1/2"). The assembly has (2) door leaf. Each door leaf is 36" X 96" and has a daylight opening size of 26 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features a Jackson 2086 concealed exit device with Roton continuous gear hinges (E-1)

System 2: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (77" x 98 1/2"). The assembly has (2) door leafs. Each door leaf is 36" X 96" and has a daylight opening size of 26 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features Mid Rails and Adams Rite MS1850 3 point locking mechanism with Cast Brass Rixon Offset Pivots. (E-2)

System 3: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89" x 98 1/2"). The assembly has (2) door leafs. Each door leaf is 42" X 96" and has a daylight opening

size of 32 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features an Adams Rite MS1850 3 point locking mechanism with Regent 4 ½" Butt Hinges. (E-10)

System 4: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (77" x 98 1/2"). The assembly has (2) door leafs. Each door leaf is 36" X 96" and has a daylight opening size of 26 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features an Adams Rite MS1850 3 point locking mechanism and Regent 4 ½" Butt Hinges. (E-5)

System 5: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (77" x 98 1/2"). The assembly has (2) door leaf. Each door leaf is 36" X 96" and has a daylight opening size of 26 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features a Von Duprin 9947 concealed exit device with Regent 4 ½" Butt Hinges. (E-6)

System 6: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89" x 98 1/2"). The assembly has (2) door leaf. Each door leaf is 42" X 96" and has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features a Jackson 1286 concealed exit device with Regent 4 ½" Butt Hinges. (E-8)

System 7: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89" x 98 1/2"). The assembly has (2) door leaf. Each door leaf is 39 1/2" X 96" and has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features a Jackson 2086 concealed exit device with Regent 4 ½" Butt Hinges. (E-9)

System 8: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89" x 98 1/2"). The assembly has (2) door leaf. Each door leaf is 42" X 96" and has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features a Von Duprin 9947 concealed exit device with Regent 4 ½" Butt Hinges. (E-12)

System 9: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89" x 98 1/2"). The assembly has (2) door leaf. Each door leaf is 42" X 96" and has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features a Von Duprin 9927 concealed exit device with Regent 4 ½" Butt Hinges. (E-11)

System 10: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89" x 98 1/2"). The assembly has (2) door leaf. Each door leaf is 42" X 96" and has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features an Adams Rite MS1850 3 point locking mechanism with Regent 4 ½" Butt Hinges. (E-14)

System 11: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89" x 98 1/2"). The assembly has (2) door leaf. Each door leaf is 42" X 96" and has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Wet Glazed. The entrance features an Adams Rite MS1850 3 point locking mechanism with Regent 4 ½" Butt Hinges. (E-15)

System 12: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89 1/2" x 120 1/2"). The assembly has (2) door leaf. Each door leaf is 41 3/4" X 95 1/2" and

has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Dry Glazed. The entrance features a Sergeant 8400 concealed vertical rod device with Mc Kinney Butt Hinges.

System 13: MSD-375 Aluminum Frame Entrance Door System; comprised of one entrance door assembly (89 1/2" x 120 1/2"). The assembly has (2) door leaf. Each door leaf is 41 3/4" X 95 1/2" and has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Dry Glazed. The entrance features a Sargent AD8500 rim exit device with HC-L980 mullion and Mc Kinney Butt Hinges.

System 14: MSD-375 Aluminum Frame Entrance Door System; Comprised of one entrance door assembly (89 1/2" x 120 1/2"). The assembly has (2) door leaf. Each door leaf is 41 3/4" X 95 1/2" and has a daylight opening size of 32 5/16" x 82 3/16"; the door leafs are Dry Glazed. The entrance features a Corbin Russwin rim exit device with KRM200FWS mullion and Kinney Butt Hinges.

Glazing Description:

System	Glass Construction [1]	Glazing Method [2]
1,4	SG-1 or SG-2	GM-1
2,10	SG-2 or SG-3	GM-1
3	SG-3	GM-1
5,6,7,8,9	SG-1	GM-1
11	SG-1 or SG-3	GM-1
12,13,14	SG-4	GM-2

Note: [1] See the "Glass Construction Key" for the glazing construction.
[2] See the "Glazing Method Key" for the glazing method description.

Glass Construction Key:

SG-1: Laminated glass unit. The unit is made up of: (2) ¼" heat strengthened outboard over a 0.070" polycarbonate with urethane adhesive interlayer. The glass thickness and type used in the laminated glass unit shall comply with ASTM E 1300-04.

SG-2: Laminated glass unit. The unit is made up of: (2) ¼" heat strengthened outboard over a 0.100" Solutia Saflex HP interlayer. The glass thickness and type used in the laminated glass unit shall comply with ASTM E 1300-04.

SG-3: Laminated glass unit. The unit is made up of: (2) ¼" heat strengthened outboard over a 0.090" Solutia Saflex IIIG PVB interlayer. The glass thickness and type used in the laminated glass unit shall comply with ASTM E 1300-04.

SG-4: Laminated glass unit. The unit is made up of: (2) ¼" heat strengthened outboard lite over a 0.090" SentryGlas Plus interlayer. The glass thickness and type used in the laminated glass unit shall comply with ASTM E 1300-04.

Glazing Method Key:

GM-1: The laminated glass unit is exterior glazed with 0.5625" glazing penetration using structural silicone and a FG-5185 vinyl gasket between the aluminum on the interior side of the glass and a FG-1133 vinyl

gasket on the exterior side of the glass. There are two (2) neoprene setting blocks between the glass on the bottom and the aluminum at each section of the glass unit.

GM-2: The laminated glass unit is exterior glazed with 0.5625" glazing penetration using an FG-5948 coextruded gasket between the aluminum on the interior side of the glass and a FG-1133 vinyl gasket on the exterior side of the glass. There are two (2) neoprene setting blocks between the glass on the bottom and the aluminum at each section of the glass unit.

Frame Construction: The frame was constructed of extruded aluminum members.

Vertical Mullions: The vertical members consist of hollow extruded aluminum with various wall thickness' are continuous from head to sill. The corners were straight cut, butted sealed with butyl tape and secured with (3) #14 X 1" hex head fasteners through the jambs into the head, sill and horizontal members.

Horizontal Mullions: The horizontal members consist of hollow extruded aluminum with various wall thickness'. The corners were straight cut, butted sealed with butyl tape and secured with (3) #14 X 1 " hex head fasteners through the jambs into the horizontal members

Reinforcement: None

Product Identification: A label will be affixed to the window wall system. The label includes the manufacturer's name; the product name; the design pressure rating.

LIMITATIONS

Allowable Dimensions:

System 1:
Overall Dimensions: 77" X 98 ½"
Maximum Individual Door Leaf Dimensions: 36" X 96"
Configuration: Operable Pair of Leaves
System 2:

Overall Dimensions: 77" X 98 ½"
Maximum Individual Door Leaf Dimensions: 36" X 96"
Configuration: Operable Pair of Leaves

System 3:

Overall Dimensions: 89" X 98 ½"
Maximum Individual Door Leaf Dimensions: 42" X 96"
Configuration: Operable Pair of Leaves

System 4:
Overall Dimensions: 77" X 98 ½"
Maximum Individual Door Leaf Dimensions: 36" X 96"
Configuration: Operable Pair of Leaves

Allowable Dimensions (Continued):

System 5:
Overall Dimensions: 77” X 98 ½”
Maximum Individual Door Leaf Dimensions: 36” X 96”
Configuration: Operable Pair of Leaves

System 6:
Overall Dimensions: 89 X 98 ½”
Maximum Individual Door Leaf Dimensions: 42” X 96”
Configuration: Operable Pair of Leaves

System 7:
Overall Dimensions: 89 X 98 ½”
Maximum Individual Door Leaf Dimensions: 39 ½” X 96”
Configuration: Operable Pair of Leaves

System 8:
Overall Dimensions: 89” X 98 ½”
Maximum Individual Door Leaf Dimensions: 42” X 96”
Configuration: Operable Pair of Leaves

System 9:
Overall Dimensions: 89” X 98 ½”
Maximum Individual Door Leaf Dimensions: 42” X 96”
Configuration: Operable Pair of Leaves

System 10:
Overall Dimensions: 89” X 98 ½”
Maximum Individual Door Leaf Dimensions: 42” X 96”
Configuration: Operable Pair of Leaves

System 11:
Overall Dimensions: 89” X 120 ¼”
Maximum Individual Door Leaf Dimensions: 42” X 96”
Configuration: Operable Pair of Leaves

System 12:
Overall Dimensions: 89” X 120 ¼”
Maximum Individual Door Leaf Dimensions: 42” X 96”
Configuration: Operable Pair of Leaves

System 13:
Overall Dimensions: 89 1/2” x 120 1/2”)
Maximum Individual Door Leaf Dimensions: 41 3/4” X 95 1/2”
Configuration: Operable Pair of Leaves

System 14:
Overall Dimensions: 89 1/2” x 120 1/2”
Maximum Individual Door Leaf Dimensions: 41 3/4” X 95 1/2”
Configuration: Operable Pair of Leaves

Design Pressures (DP):

System 1 through 12: +70; -80 PSF

System 13 and 14: +60; -60 PSF

Impact Resistance: These entrance door assemblies satisfy the Texas Department of Insurance's criteria for protection from windborne debris in both the **Inland I** and **Seaward** zones. These entrance door assemblies have passed an impact criteria equivalent to Missile Level D specified in ASTM E 1996-04. These entrance door assemblies may be installed at any height on the structure as long as the design pressure rating for the assembly is not exceeded. These entrance door assemblies will not need to be protected with an impact protective system when installed in areas where windborne debris protection is required.

Acceptance of Smaller Assemblies: Entrance door assemblies with dimensions equal to or smaller than those specified above are acceptable within the limitations specified in this report.

INSTALLATION INSTRUCTIONS

General: The door assembly shall be prepared and installed in accordance with "StormMax FG-5100 Installation and Glazing Manual," sheets 1 thru 16 of 16, dated 01-2010, Oldcastle Building Envelope and this product evaluation report. Detailed installation instructions and drawings are available from the manufacturer.

The **MSD-375** doors can only be installed into two (2) types of faming: The FG-5000/5100 (2-1/2" x 5" frame) which uses the FG-5168 door Jamb or the HR-250/251 Reliance StormMax (1" X 5"), which uses the D-226 subframe.

Installation into Wood Opening:

Location	Fastener Description	Fastener Location
Frame Head	The door assembly is attached to the framing member using five (5) 5/16" x 4-1/2" lag bolts (2/1/2-min. embedment)	Fasteners are located at the centerline, and then two (2) located at 3" intervals on either side of the centerline.
Frame Jamb	The door assembly is attached to the framing members using six (6) 5/16" x 4-1/2" lag bolts (2-1/2" minimum penetration).	Fasteners are spaced 6" from each end. There are then four (4) lag bolts located at 44", 46", 50", and 52" from the bottom end.
Threshold	The door assembly is attached to the framing members using six (6) #14 x 3" wood screws (2-1/2" minimum penetration.	Fasteners are spaced at 2-3/4", and 4-3/4" on either side of the centerline.

Installation into Steel Opening

Location	Fastener Description	Fastener Location
Frame Head	The door assembly is attached to the steel framing using two (2), 5/16" x 1" bolts)	Fasteners are located one at 4" on each side of centerline
Frame Jamb	The door assembly is attached to the steel framing four (4) 5/16" x 3-1/2" bolts.	Fasteners are spaced 4-7/8" from the top end and 2-3/8", 46-1/2" and 50-1/2" from the bottom end.
Threshold	The door assembly is attached to the steel framing using two (2) #12 x 1-1/4" bolts.	Fasteners are spaced one at 4" on either side centerline.

Installation into Concrete Opening

Design Drawings: The entrance door assemblies shall be installed in concrete openings in accordance with Drawing No. 12-126, dated May 24, 2012, sheets 1 - 8 of 8, signed and sealed by Walter A. Tillit Jr., P.E. on May 29, 2012. The referenced drawings will be referred to as the "approved drawings" in this product evaluation report.

Note: The manufacturer's installation instructions shall be available on the job site during installation. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC), the International Building Code (IBC), and the Texas Revisions.